

OCCURRENCE OF VIRUS-LIKE PARTICLE IN  
LYMPH NODES WITH LUPUS ERYTHEMATODES

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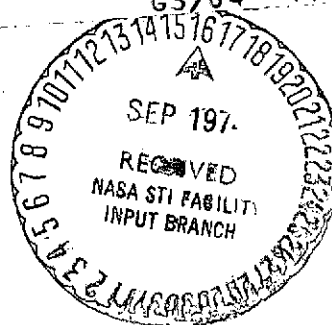
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16. Abstract  In lymph nodes of patients, each suffering from lupus erythematodes visceralis, lupus erythematodes chronicus disseminatus and lupus erythematodes chronicus discoides, we detected virus-like particles (tubular-reticular structures) which are localized in the endoplasmatic reticulum of the capillary endothelial cells, reticulum cells and lymphocytes.  Their nature, i.e., whether they are a reaction product of the cell of nucleocapsides of (para)-myxoviruses, has not yet been determined			
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# OCCURRENCE OF VIRUS-LIKE PARTICLE IN LYMPH NODES WITH LUPUS ERYTHEMATODES<sup>1</sup>

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A growth of lymph nodes ("Adenopathy") has been described in 58.6% of /796\*  
patients suffering from visceral lupus erythematoses (L.E.) [3]. The cervical  
lymph nodes are supposed to be involved up to 60% in the disease process, the  
axillary and inguinal nodes to about 25%. We investigated inguinal lymph nodes  
in some patients who suffered from various forms of L.E. in order to obtain  
information about the occurrence of virus-like structures which have already  
been demonstrated in various cell types of different organs [1, 6, 8, 9, 14,  
17].

## Material

The inguinal lymph nodes of 2 patients with visceral L.E., 2 with L.E.  
chronicus disseminatus and 4 with L.E. chronicus discoides localisatus were  
investigated histologically (dyes: HE, v. Gieson-Elastika, PAS, Tibor-PAP,  
and methyl green-pyronin) and with the electron microscope.

## Method

The inguinal lymph nodes, removed under local anesthesia, were fixed for  
30 minutes in 1% osmium tetroxide in a cacodylate buffer (pH 7.2 0.1 m), de- /797  
hydrated, imbedded in Vestopal W, sectioned in the Ultratone LKB, contrasted  
with 1% uranyl acetate and lead citrate and investigated at 60 kV.

## Results

The histological findings of the individual lymph nodes are presented in  
the table. In one case each of L.E. visceralis, L.E. chronicus disseminatus  
and L.E. chronicus discoides localisatus it was possible to demonstrate virus-  
like particles or tubular-reticular structures with the electron microscope.

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\*Numbers in the margin indicate pagination in the foreign text.

They were mainly found in the expanded endoplasmatic reticulum of endothelial cells in capillaries (Figure 1) and in reticulum cells. Far less often they occurred in lymphocytes. In their size (200-280 Å diameter), arrangement and location they resemble the inclusions already found in other organs. In addition to the histological findings, such as necrobiosis and phagocytosis by macrophages, and the formation of giant cells and scar tissue, which were — confirmed with the electron microscope, worthy of note are the ultrastructural wall modifications of capillaries in the shape of splitting and reduplication of basal membrane and considerable vessel wall extensions in visceral L.E. (Figure 2).

TABLE. LYMPH NODE FINDINGS OF THE L.E. PATIENTS EXAMINED

	Diagnosis	Age	Sex	Histological Findings*	Electron Microscope Proof of Virus-like Particles
1	L.E. visceralis	65 yrs.	M	Chronic lymphadenitis with lymphoreticular hyperplasia and scarring	--
2	L.E. visceralis	37 yrs.	F	Cluster necroses, reticular, partially granulomatous hyperplasia with giant cells of the Langhans' type	Reticulum cells
3	L.E. chronicus disseminatus	76 yrs.	F	Partially necrotizing, partially scarring lymphadenitis with lymphoreticular hyperplasia and sinus catarrh	Endothelial cells, re@ ticulum cells and sporadically lymphocytes
4	L.E. chronicus disseminatus	33 yrs.	M	Chronic lymphadenitis with lymphoreticular hyperplasia and sinus catarrh; fibrous concentric lamellar wall thickening indicated in individual small arteries	--
5	L.E. chronicus discoides localisatus	56 yrs.	F	Chronic lymphadenitis	--

	Diagnosis	Age	Sex	Histological Findings*	Electron Microscope Proof of Virus-like Particles
6	L.E. chronicus discoides localisatus	61 yrs.	M	Chronic lymphadenitis with lymphoreticular hyperplasia and scarring	Endothelial cells, lymphocytes
7	L.E. chronicus discoides localisatus	30 yrs.	M	Chronic lymphadenitis	--
8	L.E. chronicus discoides localisatus	42 yrs.	F	Chronic lymphadenitis with lymphoreticular hyperplasia and scarring	--

\*We sincerely thank Doctor Th. Thormann, University Skin Clinic of the Medicine Department (Charity) for kindly providing us with individual lymph node findings.

### Discussion

The occurrence of virus-like structures has been described twice before in lymph nodes of persons afflicted with L.E. visceralis [11, 13]. The nature of the virus-like structures or tubular-reticular inclusions, i.e., whether they are immature nucleocapsides of (para)-myxoviruses or reaction products of cells, has not yet been determined [1, 6, 17]. Our findings, according to which the lymph nodes of one patient each with L.E. visceralis, L.E. chronicus disseminatus or L.E. chronicus discoides localisatus accommodated such structures, indicate that all forms of L.E. represent variants of one disease entity in which the tendency to generalization can be clearly marked. We were able to draw the same conclusions from electron microscope investigations of bone marrow [10]. The preference for vessel endothelia and reticulum cells as "hosts" of these structures points to the vessel system as the root for systemic dissemination. The thickening, splitting, and reduplication of the basal membrane, as well as the widening of the entire vessel wall, support this view. Such vessel modifications were indicated in a number of organs (skin, muscle, kidneys) [7, 9, 12, 14] and interpreted as generalized microangiopathy [12, 14].

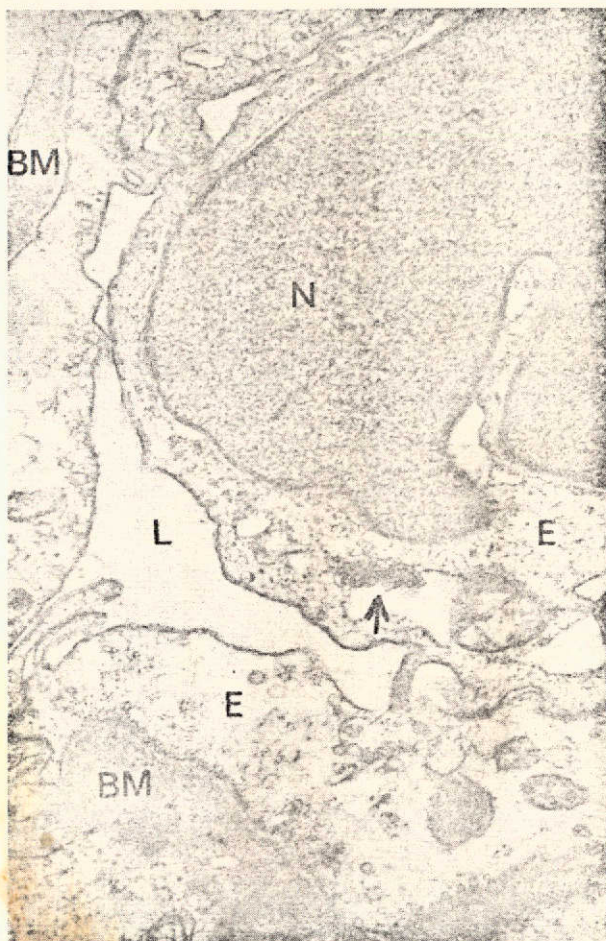


Figure 1. Lymph Nodes in L.E. Chronicus Disseminatus. Virus-like structures (↑) in the expanded endoplasmatic reticulum of an endothelial cell (E). N = nucleus, L = lumen, BM = basal membrane.

It is worthy of note that we found virus-like structures only relatively rarely on the lymphocyte level, in comparison to the already mentioned two inclusion-positive lymph nodes [11, 13] and to reports about the growth of circulating lymphocytes [4, 5]. It is possible that this is a result of the small number of cases investigated.

It is still doubtful whether a pathogenic meaning is attributable to the particles found. However, they present a certain diagnostic help because of their high incidence for L.E., although they also occur in numerous disease pictures (auto-immune diseases, diseases of the lymphoreticular system and tumors). Since there has been no success so far in isolating or growing pure cultures of the virus particle in question, the hypothesis of the viral genesis of L.E. is so far supported only by hints (antibodies against double-strand RNA

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and DNA [15, 16] and analogous conclusions drawn from model experiments on animals (NZB/W-hybrids) [2].

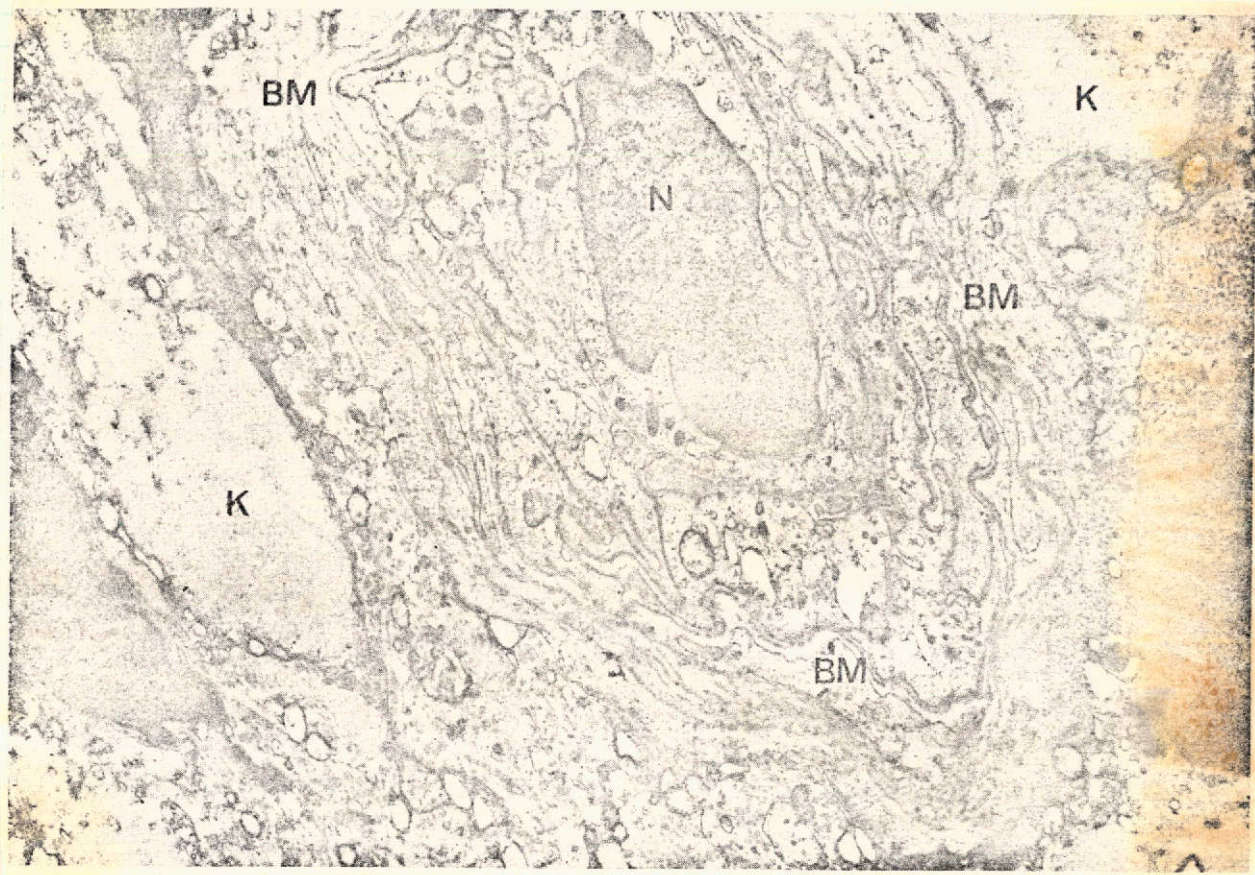


Figure 2. Decayed Capillaries with Expanded Wall and Reduplicated Basal Membranes (BM) in Scar Region of a Lymph Node in the Case of L.E. Visceralis. N = nucleus, K = collagenous fiber.

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